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ABSTRACT

Questions frequently asked of the authors and their answers are presented to provide a basis for constructive discussion of the issues and concerns resulting from the "Competency Based Curriculum" concept. No attempt has been made to rank or select the questions by importance. Responses presented reflect the authors' thinking at the time of writing and are subject to modification. Questions deal with definitions, instructional strategy, effectiveness, course content, entry level competencies, identification of competencies, assessment procedures, and newness of approach. (Author/LBH)

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SHORT ANSWERS TO FREQUENT QUESTIONS ABOUT COMPETENCY BASED CURRICULUM

A Working Paper

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A short paper prepared for discussion
of important questions and potential responses

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1. WHAT IS A COMPETENCY BASED CURRICULUM?

Response: Competency based curriculum has three major components -- competency identification, criteria level, and assessment. Instruction is a significant component but once the three major components are implemented, instruction evolves readily from them. All types of curriculum are concerned with instruction based on achievement of its goals or objectives which are identified in some manner. The distinction setting competency based curriculum apart is the manner in which it is developed.

Competencies are identified with reference to specified roles, stated in measurable terms, and validated and evaluated in relation to performance of the specified role on which they were derived. The competencies identified in such a manner should be made public prior to holding persons accountable for their performance.

A criteria level is necessary for each competency as a standard against which to compare performance. The criteria level is the performance necessary for certification of an individual as having attained a specified competency. Derivation of each competency criteria level should be based upon the specified competency, related to the potential for future performances, and explicit with reference to the role in which competency is expected. The criteria level must be as objective as measurement techniques permit

Utilizing the competency and its criteria level as assessment strategy must be derived for each competency for which an individual is to be assessed and/or educated. The assessment must use performance as the basis for decision making. Competencies themselves indicate which assessment procedures offer the best test of performance. No or procedure will offer a conclusive decision therefore a multible measurement approach to assessment is indicated.

Instruction is developed to achieve the specified competency at the

criteria level as measured by the assessment. Learner progress is based on competency performance. Results of instruction provide direction for the modification of instruction. Both short and long term results are important for modification of instruction.

When the competency based curriculum is operationalized, it must be maintained or it becomes a reflection of historical needs. This means a continuous reassessment of identified competencies, criteria levels, instrument assessment procedures,and the need for its existence is necessary for the high quality competency based curriculum. The field and therefore the specific performances are changing. A good curriculum must be contemporary and reflect those changes if it is to meet the needs of society. Maintenance of the program is aimed at that goal.

2. IS A COMPETENCY BASED CURRICULUM BETTER THAN WHAT CAME BEFORE?

Response: A competency based curriculum permits specific statements concerning what is taught and the achievement of those competencies. The decision concerning this being better than what came before is akin to comparing apples with oranges. Both are good but it depends on your values which you would rate as better. Presently there is no objective way to value one type of curriculum over another without comparing both to what is desired and determining which is achieving the goal best.

3. CAN A CURRICULUM BE COMPETENCY BASED AND NOT INDIVIDUALIZED, PRESCRIPTIVE, AND DIAGNOSTIC?

Response: The competency based curriculum concept carries with it no specific instructional strategy. A competency based curriculum should have these characteristics:

1.) rate of student progress is determined by demonstrated competency, not time or course completion;

2.) instruction should facilitate achievement of competency without unnecessary or redunant exercises and experiences;

3.) students are responsible for active participation in the curriculum and the faculty are responsible for providing experiences with the greatest potential for achieving the competencies;

4.) emphasis would be placed on exit criteria rather than entrance requirements;

5.) instructional design is guided by the achievement of competencies;

6.) constant reassessment of all components of the competency based curriculum is done with relation to subsequent performance; and,

7.) a continuing education program based on maintaining and updating competency is part of the curriculum.

4. WHAT IS A COMPETENCY?

Response: A competency is a performance statement for a specific role and function. Usually a series of competencies are necessary for one to be identified as competent. There are various types of competencies. Some competencies can be analyzed into many smaller components. There are usually several Stimulus-Response behaviors which compose a single competency.

One should examine three areas when looking at a competency: interrelationships among competencies, extrinsic evaluation, and intrinsic evaluation of individual competencies. Examination of interrelationships among competencies covers three points. First, is there significant content and number of competencies to determine that the goal has been accomplished. Second, is each competency necessary for achievement of the goal. Third, is the competency too fine or included in another competency. Extrinsic evaluation has four areas. First, is the level of performance as conceptual as possible. Second, does the competency statement provide an appropriate amount of detail. Third, is the language clear. Fourth, is the statement as brief as possible.

Finally, is intrinsic evaluation which has five components. First, is the statement in measurable behavioral terms. Second, is the situation of performance stated. Third, does the competency statement indicate tools used or not used in performance. Fourth, is the criteria for acceptable performance provided. Last, does the statement avoid specification of learning process unless it is critical to the competency. Positive answers to these area of concern should lead to a well chosen competency.

5. WHAT IS TAUGHT IN A COMPETENCY BASED CURRICULUM?

Response: Specific content of a competency based curriculum is derived from the competencies making up that curriculum. Each competency is subjected to a content analysis. This results in instructional performance objectives. These objectives are the basis of instruction. If the content analysis was valid, the person who achieves each objective should also attain the competency. A good competency based curriculum usually requires several cycles of students with subsequent revision in content analysis and/or instruction before it is typically considered as acceptably achieving its purpose.

6. HOW DOES ONE DECIDE WHICH COURSES IN THE FORMER CURRICULUM REMAIN, ARE CHANGED, OR REPLACED WHEN ADOPTING A COMPETENCY BASED CURRICULUM?

Response: Competencies are identified. They are analyzed to determine instructional objectives subsumed within them. A non-duplicating list of objectives and competencies is made. Assessment procedures for competencies and instructional objectives are developed. All courses are evaluated utilizing the assessment procedures. Specific objectives and competencies are matched with where (courses) they are achieved in the curriculum. The result is a listing of achievement and non-achievement. Anything not achieved is an instructional need. Programs not achieving objectives and/or competencies

need other support to justify their continuation.

7. HOW MANY AND WHICH COMPETENCIES COMPOSE THE B.S. IN PHARMACY DEGREE AND OTHER DEGREES?

Response: The decision concerning what achievement is worthy of a degree and which degree has been governed by philosophy, tradition, emotion, politics, and special interests. Institution of competency based curriculum does not change this. The curriculum only prepares people for a function in life. Some one or other thing decides the value and name of that preparation.

8. WHY IS A GREATER AMOUNT OF TIME SPENT IN ASSESSMENT IN THE COMPETENCY BASED CURRICULUM THAN IN THE TRADITIONAL PROGRAMS?

Response: Primary concern in the competency based approach to curriculum is the performance of the learner. All efforts are directed at the attainment of specified ends. The degree to which these are achieved serves as feedback to instruction and development for further modification and reassessment of content. Under other approaches a less rigorous assessment is used as goals are typically less identifiable or public.

9. ARE NOT WE ONLY IDENTIFYING ENTRY LEVEL COMPETENCIES AND OVERLOOKING THOSE OF THE SKILLED PRACTITIONER?

Response: A competency based program is directed at the preparation of individuals to perform a specified role function in an identified setting. Whether these competencies are entry level or not depends on your definition. They are the competencies of people who successfully perform the specified role function in that setting. If a person is expected to perform different competencies, the role function and/or setting changes. The problem here is similar to comparing apples and oranges. It is a matter of what you want.

10. ARE ALL COMPETENCIES OF EQUAL VALUE?

Response: Are all apples of equal value? Probably not, as it depends on what you intend to use them for. Use or function and role determine the value of most items. This is true of competencies.

11. WILL EVERYONE PASS IN A COMPETENCY BASED PROGRAM?

Response: The goal of competency based education is to prepare people who have achieved specified competencies. To prepare everyone to do something irregardless of their apptitude, abilities, and attributes is more costly than preparing a subset of the population. A decision as to what pre-requisite apptitude, ability, and attribute will be required for entry into a program influences what percentage will be successful. Those requirements are most fairly arrived at from examination of the competencies themselves. Usually fiscal, political, and philosophical forces determine what percentage will pass and not the competency based curricular development approach.

12. WHAT DOES IT MEAN TO EVALUATE AND VALIDATE COMPETENCIES?

Response: Evaluation is the process of determining the value of something. Applying this to competencies means to determine if the competency is of value and who feels it is in what setting. A valuable competency may not be a valid competency. Validation is the examination to determine if something is what one says it is. As applied to competencies, this means that a person with these competencies really is able to perform the role function in the setting as intended.

13. WHAT DOES ANALYSIS AND SYNTHESIS HAVE TO DO WITH COMPETENCY BASED EDUCATION?

Response: Analysis is the breaking of a whole into its parts. Synthesis is combining parts to make a whole. Applied to competency based education,

the concepts of analysis and synthesis relate best to competency identification. The existing whole role function in a setting is analyzed by breaking it into all its parts. The non-existing but desired role function in a setting takes parts and synthesizes it. Perhaps more clearly stated, analysis is a process of identifying the "must have" class and synthesis is a process of identifying the "should have" class of competency.

14. WHAT IS THE "SHOULD HAVE" AND "MUST HAVE" CLASS OF COMPETENCY?

Response: "Must have" competencies are those behaviors, skills, and knowledge necessary for performing a specific role function with reference to a specified class of setting. If any "must have" competency were not present the individual would be considered as not performing the specific role function in the setting specified. They are the competencies which are most generic. "Should have" competencies are those which relate to a cutting edge, progressive or desirable but not a standard of practice class of performance. Not everyone needs to have these for performing the role function in the class of setting. They are least like the generic performance of general standard or practice.

15. DOES A "MUST HAVE" AND "SHOULD HAVE" COMPETENCY REMAIN SUCH FOR ALL TIME?

Response: The class membership for a given competency may change. As more persons attain and use "should have" competencies they become "must have". The reverse may also be true. It is also possible for a competency to leave both classes as it is no longer used.

16. WHAT HAPPENS TO COMPETENCIES AND INSTRUCTION AS THE KNOWLEDGE AND PRACTICE BASE FOR THE FIELD CHANGES?

Response: In most professions new information and needs result in revised performance. The competency based curriculum can best react to this

through a maintenance subsystem. As content changes within a competency, the instructional objectives, content analysis, assessment procedure and/or content change to reflect it. If the practice role function changes the competency may be revised with the accompanying modification in instruction and assessment.

17. HOW ARE COMPETENCIES IDENTIFIED?

Response: Competency identification is either an analysis or snythesis procedure depending upon the goal. Identifying currently needed competencies can best be done through analysis while creation of the "should have" variety of competency is a job for snythesis. Simply stated, analysis is the separation of the functioning of a competent practitioner into the component parts while snythesis is a combination of components to create a new type of competent practitioner. In analysis we want to create more practitioners like those which exist and in snythesis we want to create something new that will fulfill previously unmet needs.

There are many ways to identify competencies. The way you select to identify competencies will determine what statements can be made about the resultant competencies.

Writing competencies from the present curriculum limits one to maintaining the present program. This may be very adequate depending upon the relationship of the present program to the job students will subsequently be expected to perform.

Task analysis is the broad name for three procedures -- job, skill and topic analysis. Job analysis is the description of the physical and psychomotor skills necessary to accomplish a job. Skills analysis is how the job is accomplished and topic analysis is the description of an intellectual task such as solving simultaneous equations. Needless to say, identification of competencies through task analysis would require use of methodology from all three procedures.

Content analysis aims at the objective quantification of content classified using a system of categories and explicitly formulated rules. It gives guidance as to objectives contained in content. It's a fancy way of obtaining objectives from the present program.

Logical analysis is the examination of the rationale behind each objective and competency. If the rationale supporting an objective or competency logically leads to accomplishment of the goal, then that objective or competency should be retained. If there is not such support then the objective or competency should not be kept.

Surveys are a technique for identifying competencies through population or group opinion. Some major strategies under the survey heading are: scaling, question completion, semantic differential, Q-Sort, and Delphi technique. This is not an all inclusive listing. Scaling is a technique where the competencies are rated for value on a scale, usually a numeric one. Question completion involves using answers to a questionnaire to support or not support competencies. The semantic differential survey uses words (usually five or seven) to describe something on a bipolar scale and the respondents indicate where their response best fits. A Q-Sort requests the members of a sample to rank or order competencies, etc. using some value system, usually highest to lowest importance. Lastly, the Delphi technique which obtains the lowest common denominator consensus of a population or group.

Observation and Expert Opinion is the methodological category under which are placed several strategies: unobtrusive measures, accreditation procedures, category systems, rating systems, and goal analysis. Unobtrusive measures use an indirect measure to determine something. For example, one can wear and tear on tile flooring to determine the amount of business a store has. One can determine the original thickness of the flooring, the amount of wear caused by "every-so-many people" walking on it. Subtract the present from

original thickness to determine wear, divide by the wear caused by "every-so-many people"; and multiply that result by the number included in "every-so-many people" to determine the estimated number of potential customers. Accreditation procedures use expert professional opinion and membership judgment to establish standards. Category systems are methods where behaviors are placed in groups using some criteria. A job analysis following some methodologies is an example. With rating systems, professionals are asked to rate performance and the results are used to derive competencies. Lastly, goal analysis uses a group consensus or a modified Delphi procedure to establish competencies on a face to face level. In other words, responses are verbal, not written.

Analysis of documents grouping has three components: survey of literature, unobtrusive measures, and content analysis. We all know that survey of literature is a review and determination of what authorities have said. Unobtrusive measures as used here is a technique for collecting frequency of mention for various behaviors and then refining them into competency statements. Content analysis is where content of instruction is examined to determine underlying competencies taught or necessary.

A rarely if ever used methodology is the anthropological study. This procedure permits the researcher to look at the person, relationships, and influences in decision making. The core as well as some "should have" competencies can be derived from the resulting ethnography. Utilization of this approach results in a very complete study of a job, role or activity.

All these techniques rely upon selection of a sample from a population. Only rarely are our sample and population the same. Here are five sampling procedures, there are others:

1. Haphazard - sample based upon accessibility with no concern for representativeness;

2. Judgment - sample based upon best guesses or expert choice on what represents a population;

3. Quota - units are drawn to represent population by filling a specified quota, but as in judgment sampling, there is no guarantee that this is the case.

4. Probability - every member of the population is assigned a non-zero probability of selection; the probabilities need not be equal though they often are to increase certainty of drawing a representative sample;

5. Lastly, is the random sample which we are all familiar with.

The methodology used in identifying a competency limits or qualifies what statements can be made concerning it. Ideally the competency should be referenced to and derived from the group for which it was developed. A partial exception to this is in the case of synthesized or "should have" competencies. They should be referenced to one group but they may be generated by another population. Consumers or other health care delivery personnel could generate competencies they desire of the pharmacist.

18. WHAT ASSESSMENT PROCEDURES ARE APPROPRIATE FOR A COMPETENCY BASED CURRICULUM?

Response: Assessment of a person's performance on a specific competency is best accomplished in a manner which measures that performance in the situation under which it must ultimately be performed. The best approach would be to observe the person in actual practice over time. It is most expensive and usually not feasible. The method of choice usually utilizes work sampling. This can be accomplished through use of an assessment center approach which approaches measurement from many avenues using simulation, gaming, role playing, and generally asking the person to perform competently, with reference to the competencies, in a realistic situation. Prior to using the assessment center the individual may have been assessed using

multible choice tests, simulations, games, etc. to measure their performance on the instructional objectives. The key to selecting an assessment procedure is measuring reliably what you intend to measure.

19. HOW DO YOU KNOW IF YOUR CONTENT ANALYSIS AND THE RESULTING OBJECTIVES ARE APPROPRIATE FOR THE COMPETENCY ANALYZED?

Response: The content analysis is a breakdown of the competency into the component parts. If a person who has attained the instructional objectives developed from the content analysis achieves the competency at criteria level, then probably your content analysis is adequate. Non-achievement of the competency with attainment of instructional objectives indicates the content analysis may be inadequate though not necessarily.

20. HOW IS THE CRITERIA LEVEL FOR A COMPETENCY ESTABLISHED?

Response: A decision must be made as to whether the criteria level is to be referenced to individual or group judgment and/or to the actual performance by experienced practitioners or a judgment of proper performance. Actual performance is usually best for "must have" competencies assuming the trainee will be expected to practice in a real situation. For the "should have" competencies the criteria level must by synthesized from expectations within the competency statement. It could be provided by those who value the competency or the rationale supporting the "should have" competency.

After those decisions are made, there are several possible methods for establishing the criteria level. First is the individual logical analysis or consensus approach. This is establishment of criteria by judgment or decree. Some feel it is least empirical, data based, or defensible. Another method is the development of a contingency type table to indicate the percentage

of those who pass one measure and achieve a certain performance level on another measure. This is a type of correlation. A task analysis with care taken to precisely measure performance standards is the third method. Fourth is the ethnographic study in which one collects performance standards as part of the methodology. Last and most volatile is to separate practitioners into two categories - competent and non-competent. Then measure each group's performance level on the competencies being examined. The key for all methods is to determine an ideal and a realistic criteria level of performance for each competency. Then as long as people fall within that range they may be said to have attained the criteria for competency.

21. IS COMPETENCY BASED EDUCATION AS AN APPROACH NEW?

Response: A competency based curriculum is not a new approach to education. It has been in the literature since the days of the McGuffy Reader. Only with the popular press for accountability and consumerism in education has the concept come to the implementation stage. Development of instructional programs based on the competency concept holds promise for preparing persons for which specific statements concerning their capabilities can be made and objectively supported.